THE M. W. KELLOGG CO.

THE
PUBLIC SERVICE CORPORAT
Height 250 feet, inside

ENLY TWINS
OF NEW JERSEY (NEWARK, N. J.)
op diameter 9 feet 6 inches

[BLANK PAGE]

27

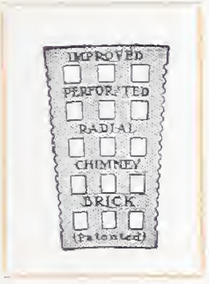
SOME STACKS

PHILADELPHIA OFFICE,
1225 Betz Building
THE PAUL B. HUYETTE CO.,
Agents.

6978

SOME STACKS

SETTING FORTH THE ADVANTAGES
OF THE IMPROVED PERFORATED
CORRUGATED RADIAL BRICK
IN CHIMNEY BUILDING



Patented.

ILLUSTRATED

ISSUED BY

THE M. W. KELLOGG CO.

Chimney Builders

143 LIBERTY STREET NEW YORK

(1906)

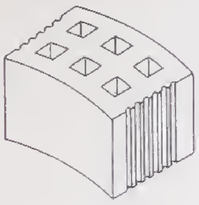
Copyright 1906
THE M. W. KELLOGG CO.

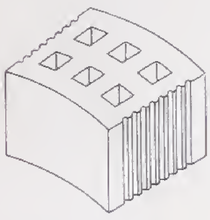
Chimney Builders
New York
2nd Edition 50,000

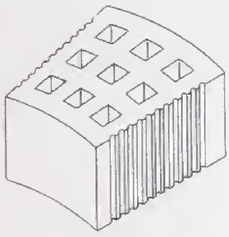
CHIMNEY BUILDERS

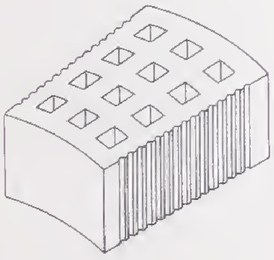
WE suggest the use of Improved Corrugated Perforated Radial Brick as the best possible method known to-day for chimney building. The corrugation is ours and is designed and added for strength.

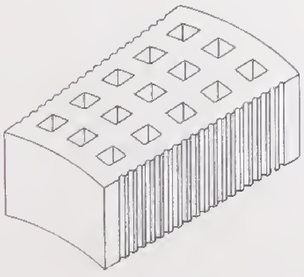
Corrugation occurs on sides of brick, forming radial joints in the chimney; the bricks are perforated vertically in addition to this.











Tests made by Professor Mansfield Merriman, Lehigh University, show:

That the adhesion between mortar and our corrugated brick is 62½ per cent. greater than between mortar and ordinary straight-sided radial chimney brick.

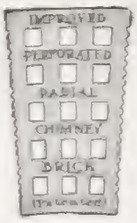
Again, not only are our corrugated joints much the stronger individually, but the test showed that throughout a chimney so built there was no possibility of one or a dozen joints being very much weaker than the average.

The corrugation means evenness to the structure.

Variation in adhesion of corrugated joints, 29 8-10 per cent. Variation in adhesion of plane joints, 340 per cent.

Test also showed that with straight-sided radial chimney bricks, burnt a trifle harder than they should be, adhesion between such bricks and mortar is very slight.

Various sizes of Improved Corrugated Perforated Radial Brick used to secure different Thicknesses in Chimney Walls.



TWIN CHIMNEYS AT THE LEHIGH VALLEY R.R.

Height 200 feet, internal

LOCOMOTIVE SHOP (SAYRE, PENNSYLVANIA)

top diameter 13 feet

THE M. W. KELLOGG CO.

Improved Corrugated Perforated Radial Bricks are made from carefully chosen clays, so mixed that when burnt at a very high temperature they are rendered refractory and impervious to moisture. An item of great importance to the stability of a chimney.

Besides being shaped to a radius to suit each section of a chimney, our blocks are moulded with vertical perforations permitting thorough burning, so increasing their density and strength, and reducing weight. Per-

Method of Bonding

forations form dead-air cells in the walls of chimney, the best of insulation; the dead air surely prevents rapid heating or cooling of the walls, which causes cracking; also prevents the condensing of the gases, maintaining always the maximum draught regardless of weather.

ENGINEERING COMPANY OF AMERICA
74 BROADWAY
NEW YORK.

January 20, 1904

Messrs. M. W. Kellogg Co.,
71 Day Street, New York

Gentlemen:

The 210' x 15' stack that you erected for the Canadian Copper Co. at Copper Cliff, Ontario, while I was engaged in the construction of their new plants, impressed me as being a first-class, workmanlike job. I examined the material before it was put in the stack and considered it very strong material. The promptness with which the actual work of building was done was very gratifying.

I hope to use your stacks in the future when able to do so.

Yours truly,

F. D. Weeks

F. D. W./H.

In laying bricks it is our practice to force mortar into the vertical perforations (see sketch) to distance of one-half to three-quarters of an inch, thus more effectively locking bricks together. This makes the tightest possible wall.

Common brick is neither designed nor adapted for laying circles, and when used requires constant clipping and much mortar to fill voids, besides varying greatly in quality.

Using our material makes possible single shell construction, most effective and economical. No need of fire brick; our material is made of fire clay.

Except for acid works, the handling of hotter gases than result from boiler furnaces, etc., our single shell construction is all that is necessary and besides other advantages imposes a lighter load on foundations and a consequent saving in size and cost of latter.

Chimneys properly constructed require no attention after completion. Our construction being adopted in many modern plants, illustrations of some are shown

---

William Crabb & Co.,

Manufacturers of all kinds of

Hackle, Gill, Comb and Card Pins and Picker Teeth,

Wood Card Clothing, Hackles, Gills and Fallers,

Bloomfield Avenue and Morris Canal,

Newark, N. J. Jan. 24, 1904.

Messrs. M. W. Kellogg Co.,
37 Dey Street, New York.

Gentlemen:

Replying to favor of 22d inst. would say that we have intended to express our appreciation of the radial brick stack you build for us.

The workmanship and material is all that we could desire, and your contract was fulfilled to our entire satisfaction. The draft is most satisfactory.

While we cannot tell just what pressure we will have, as all our fires are not yet connected, we feel confident that we will have draft enough to do what you would not guarantee the stack to do, viz., to remove the dust from our grinding machines.

Very truly yours,

William Crabb & Co

C-B

CANADIAN COPPER CO.
COPPER CLIFF, ONTARIO
Height 240 feet, internal top diameter 15 feet

LEE PAPER CO.
VICKSBURG, MICH.
Height 200 feet, internal top diameter 10 feet

herein, substantiates its claims as an efficient draught producer and a strong and permanent structure.

Note our construction (see page 14). Our chimneys have greater internal diameter at base than at top. While capacity is estimated by top diameter, the greater the area, within defined limits, provided at the point of entrance, where gases are hottest, and consequently

Cast Iron Chimney Cap with Expansion Joints for high temperature.

of greater volume and so must have space, then the better the draught. With our design, the internal area averages greater than a chimney of uniform diameter; consequently there is much less friction or resistance to the rapid rise of gases.

August 17, 1908.

Messrs. M. W. Kellogg Co.,
17 Day Street, New York.

Gentlemen:

Referring to contract which you had for building brick stack for the Nassau County Water Company at Oyster Bay, L. I., beg to state that this contract is perfectly satisfactory to us both in workmanship and material, and when the Nassau County Water Company is ready to receive bids for their other works, we will see that you have an opportunity.

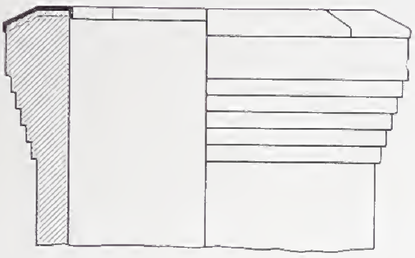
Yours very truly,

M. J. Drummond & Co.

M. J. D. H. L.

CHIMNEY BUILDERS

A brick chimney must be perfect in design for stability, draught capacity and architectural effect, each an attribute all-important to the whole. Workmanship must be regular and present a neat finished appearance. Dense, well-shaped bricks only can be used and laid with thin mortar joints. Such construction will prevent the escape of gases and minute counter-draughts, both of which are detrimental to direct draught and economy in fuel consumption.



Cast Iron Chimney Cap.
Used when temperature does not exceed 800 degrees Fahrenheit.

Special conditions govern each chimney. Temperature, fuel, gases generated, design of flues and draught required must be considered in determining height, capacity, construction and other essentials, and while

---

PROVIDENCE GAS COMPANY.

Market Square,
Providence, R. I.

John W. Ellis, President & Manager.
William Goddard, Vice President.
William P. Nye, Treas. & Secy.

January 29, 1904.

Messrs. M. W. Kellogg Co.,
37 Dey Street, New York.

Dear Sirs:

Your inquiry of 27h regarding our opinion of chimney built for us duly received.

Replying would say that flue connections have been made, but we have not as yet put it in operation. We are, however, very well satisfied as to preparations of the column or shaft of the chimney, and also of material and workmanship.

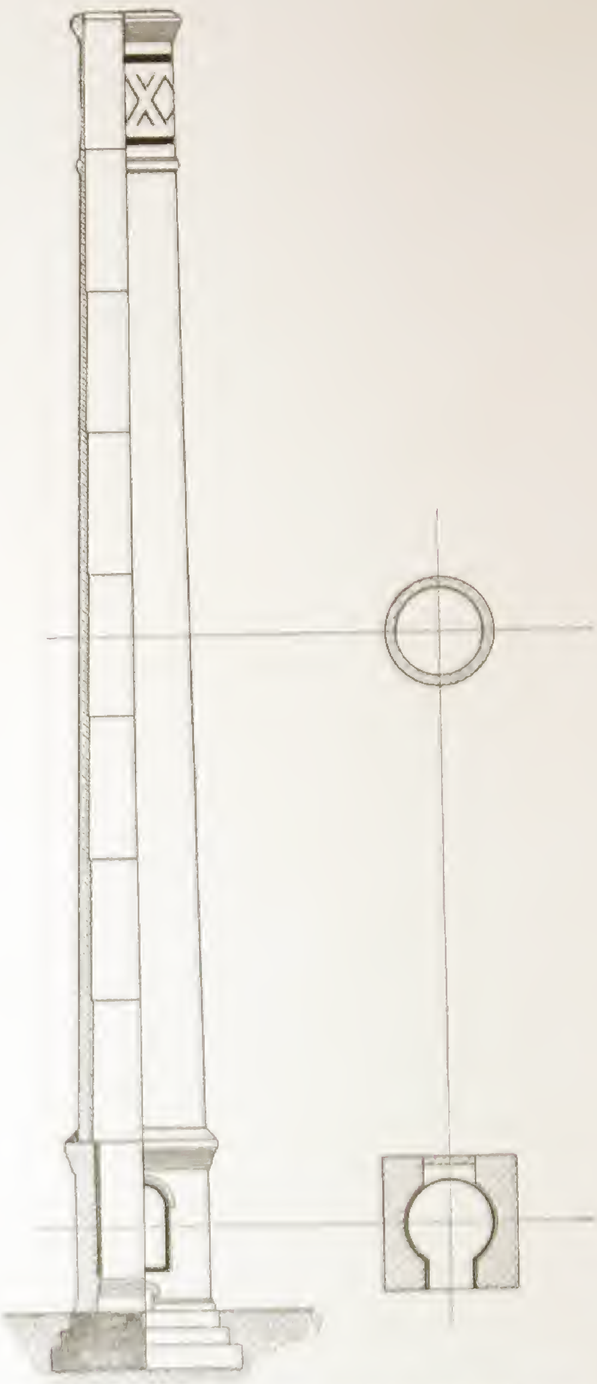
Your contract with us was carried out promptly and to our entire satisfaction.

Yours truly,

Edmund Cathels,
Gen. Supt. G. & M.

KNICKERBOCKER SUGAR REFINING CO.
EDGEWATER, N. J.
Height 182 feet 6 inches, internal top diameter 8 feet

INDUSTRIAL COLD STORAGE & ICE CO.
PHILADELPHIA, PA.
Height 167 feet, internal top diameter 7 feet

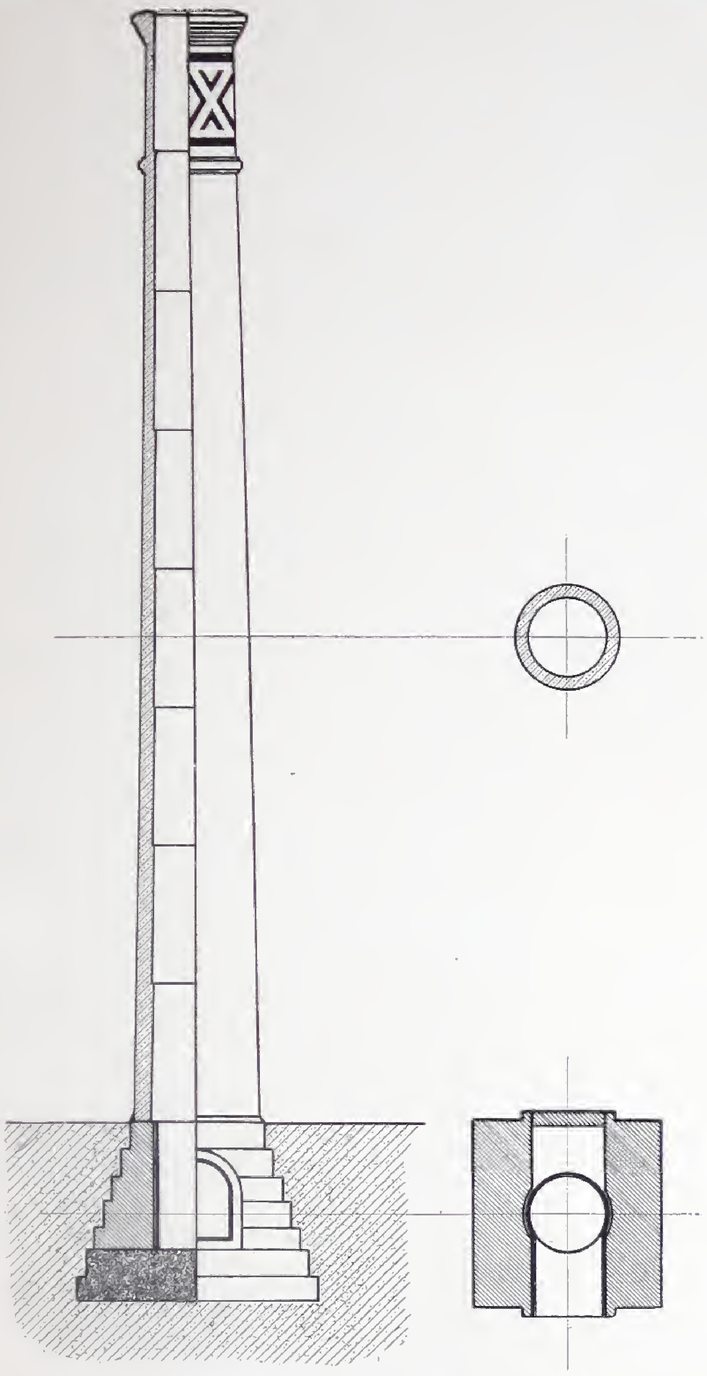


Usual design for Chimney with Overhead Flue

we give herein a table of chimney sizes, the same is not uniformly applicable, and in all instances to secure a desired result and perfect chimney, a study must be made. Our experience in such matters and such information as will be of service to prospective customers is at their command.

Using colored blocks, our chimneys may be built to exploit decorative or advertising designs. Little or no difference in cost.

The failure of some chimney builders to do perfect work along the lines we have laid down is through the use of unsuitable ingredients in the manufacture of



Usual design for Chimney with Underground Flue

bricks and the inability to recognize the necessity of employing skilled and trained artisans and mechanics.

A number of mechanical appliances have been offered to create draught and increase combustion, but the power required for their operation, together with the inevitable and rapid depreciation and the constant attention required by the apparatus, nullifies any advantage derived from an apparently insignificant first cost.

Our chimney work is guaranteed for five years. Our efforts are backed up by experience in the manufacture of material, proper methods of building, and study as engineers.

CENTRAL FELT AND PAPER CO.
LONG ISLAND CITY, N. Y.
Height 125 feet, internal top diameter 6 feet

THE TUTTLE & BAILEY MFG. CO.
BROOKLYN, N. Y.
Height 125 feet, internal top diameter 5 feet

WILLIAMSBURG PAPER CO.
WILLIAMSBURG, PA.
Height 150 feet, nominal top diameter 9 feet

COLUMBIA IMPROVEMENT CO.
TERRE HAUTE, IND.
Height 165 feet, internal top diameter 8 feet 3 inches

NEWARK CITY HALL
NEWARK, N. J.
Height 150 feet, internal top diameter 5 feet 6 inches

MORSE TWIST DRILL AND MACHINE CO.
NEW BEDFORD, MASS.
Height 150 feet, internal top diameter 7 feet

WESTERN ELECTRIC CO.
PHILADELPHIA, PA.
Height 100 feet, internal top diameter 4 feet 6 inches

UNITED GAS IMPROVEMENT CO.
PHILADELPHIA, PA.
Height 100 feet, internal top diameter 5 feet

PUBLIC SERVICE CORPORATION
Height 250 feet, stack

ENLY TWINS
OF NEW JERSEY (NEWARK, N. J.)
p diameter 9 feet 6 inches

QUAKER PORTLAND CEMENT CO.
SANDTS EDDY, PA.
Height 150 feet, internal top diameter 8 feet 4 inches

THE BROOKLYN DOCKS CO.
20th ST., BROOKLYN
Height 125 feet, internal top diameter 6 feet

THE M. W. KELLOGG CO.

SUFFOLK LIGHT, HEAT & POWER COMPANY.

Riverhead, N. Y. Oct. 5, 1901.

Messrs. M. W. Kellogg Co.,
Engineers and Contractors,
71 Pine Street, New York, N. Y.

Gentlemen:

Replying to yours of even date in which you ask for an expression of opinion regarding the one-hundred-foot chimney erected by you at our power plant, we are pleased to say that it has given perfect satisfaction.

There is no settlement of cracking since it went into service owing mainly, we believe this to be due to the high-class workmanship by the men employed, together with your excellent design of the chimney and also supervision of the work.

We wish to thank you at this time for the many courtesies tendered at your hands, and beg to remain,

Yours very truly,

Suffolk Light, Heat & Power Co.,

(pc.)

Superintendent.

The Commodore Copper Company

GENERAL OFFICES: 71 BROADWAY

New York

Messrs. M. W. Kellogg Co.,
71 Pine Street, New York.

Gentlemen:

We desire to express our appreciation of the way you fulfilled contract for chimney at Copper Cliff, Ont.

The stack is 212' high by 14' internal top diameter. It is not probable [illegible] that the material furnished and work are first class in every respect, and our dealings with you have been very satisfactory.

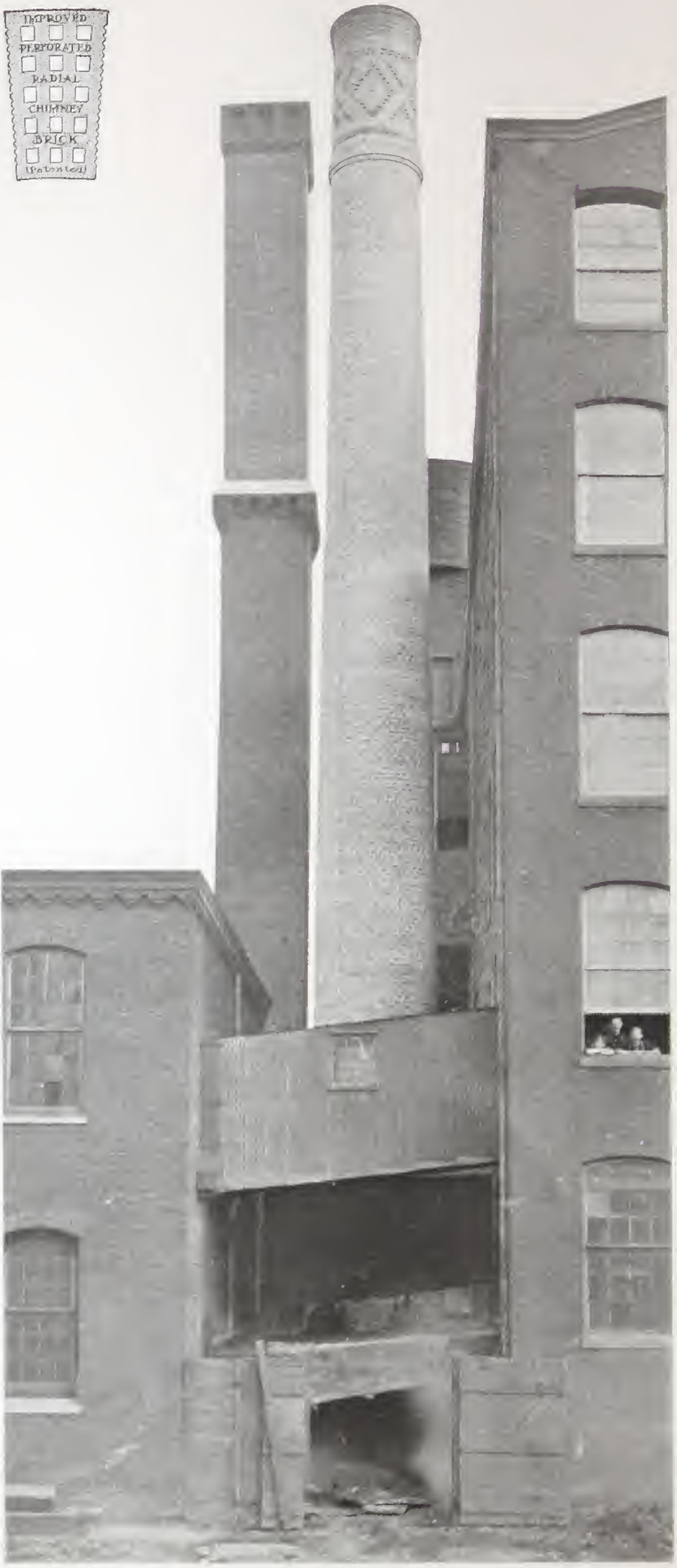
We will be very glad to have you refer prospective customers to us if you so desire.

Yours very truly,

General Purchasing Agent.

M

GOULD & EBERHART
NEWARK, N. J.
Height 125 feet, internal top diameter 4 feet



ARROTT STEAM POWER MILLS
PHILADELPHIA, PA.
Height 125 feet, internal top diameter 5 feet 6 inches

U. S. NAVAL HOSPITAL
23rd and E STREET, N. W. WASHINGTON
Height 100 feet, internal top diameter 4 feet

RAMBO & REGAR (NORRISTOWN, PA.)

Height 125 feet, internal top diameter 5 feet

CANTON CITY WATER WORKS (CANTON, O.)

Height 150 feet, internal top diameter 6 feet 6 inches

B. T. BABBITT, INC. (GRANTON, N. J.)

Height 150 feet, internal top diameter 8 feet

ERIE COUNTY ELECTRIC CO. (ERIE PA.)

Height 200 feet, internal top diameter 8 feet

ROLLAND PAPER CO. (ST. JEROME, P. Q., CANADA)

Height 125 feet, internal top diameter 5 feet 6 inches

PUBLISHERS PAPER CO.
PORTSMOUTH, N. H.
Height 250 feet, internal top diameter 10 feet

LAURENTIDE PAPER CO. (GRANDE MERE, P. OF Q.)

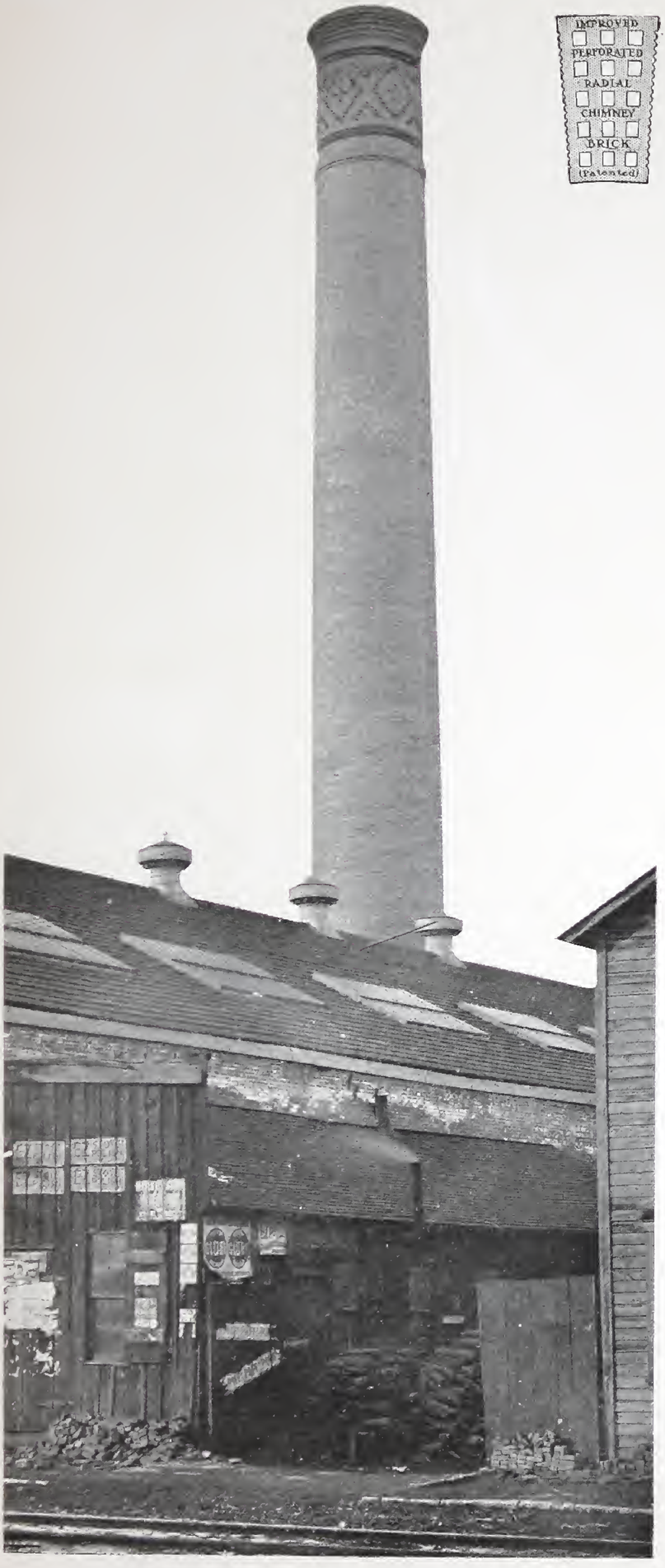
Height 180 feet, internal top diameter 9 feet 6 inches

LEBANON VALLEY COLLEGE
ANNVILLE, PA.

Height 90 feet, internal top diameter 4 feet 9 inches

PENNSYLVANIA STATE LUNATIC HOSPITAL
HARRISBURG, PA.

Height 150 feet, internal top diameter 7 feet



PEOPLES LIGHT, HEAT & POWER CO.
SPRINGFIELD, O.

Height 150 feet, internal top diameter 10 feet

A. B. SEE ELEVATOR CO. (JERSEY CITY, N. J.)

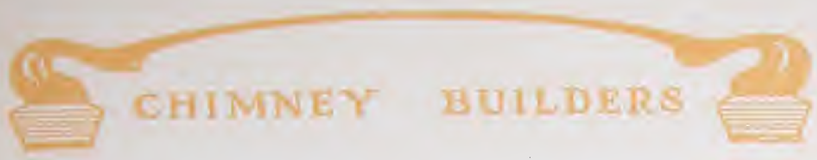
Height 125 feet, internal top diameter 4 feet 6 inches.

ORINOKA MILLS (PHILADELPHIA, PA.)

Height 125 feet, internal top diameter 6 feet

F. W. BIRD & SONS (EAST WALPOLE, MASS.)

Height 250 feet, internal top diameter 11 feet



In asking for information regarding our IMPROVED PERFORATED RADIAL BRICK CHIMNEYS, answer as many of the following questions as possible referring to them by number:

1. Firm for whom chimney is required?
2. Place where chimney is to be built?
3. On what railroad is same located?
4. Can Brick be shipped by water, state depth at dock?
5. Distance from track delivery or dock to chimney site.
6. Is chimney to be used for boiler draught or other purposes?
7. Give the probable temperature of flue gases.
8. If for boiler draught, what is total H. P.?
9. Kind of fuel or coal to be used.
10. Amount consumed per Horse Power, per hour.
11. Dimensions of chimney required. Internal top diameter, height.
12. Is arrangement for over-head or underground flue?
13. Size and shape of flue opening desired in chimney.
14. Distance from top of foundation to bottom of flue opening.
15. Kindly sketch on back arrangement of building, boilers and chimney.
16. What is the latest date allowed for completion of chimney?

If price of foundation is required answer the following:

17. What is nature of soil where chimney will stand?
18. What is calculated safe load, per sq. ft.?
19. What depth of excavating necessary to reach good soil?
20. Will pumping be necessary during excavation?

SIZE OF CHIMNEYS FOR STEAM BOILERS

Assuming four pounds of coal is burned per horse per power hour

From "Chimney Designs and Theory" by William Wallace Christy

DIA. IN INCHES	AREA IN SQ. FT.	HEIGHT OF CHIMNEY — HORSE POWER — 4 LBS. OF COAL BURNED CONSIDERED 1 HORSE POWER										EQUIV. SIDE OF SQ. CHY.
		50'	60'	70'	80'	90'	100'	110'	125'	150'	175'	200'	225'	250'	300'	
18	1.77	42	46	49	52											16
21	2.41	55	62	65	68											19
24	3.14	72	78	85	91	98										22
27	3.98	91	101	107	114	124										24
30	4.91	114	124	133	142	153	158									27
33	5.94		149	163	172	182	192	202								30
36	7.07		179	192	205	218	228	241	257							32
39	8.33			224	241	257	270	283	302							35
42	9.62			263	282	296	312	332	351	390						38
48	12.57				364	387	410	429	458	510						43
54	15.90					491	517	543	579	647	683					48
60	19.64					605	637	669	715	797	845					54
66	23.76						774	809	865	965	1021	1092				59
72	28.27						920	962	1051	1147	1215	1300	1378			64
78	33.18							1131	1206	1349	1459	1524	1619	1706		70
84	38.48							1310	1401	1563	1654	1768	1875	1976	2165	75
90	44.18								1609	1794	1898	2031	2155	2269	2486	80
96	50.27								1830	2041	2161	2311	2451	2584	2931	86
102	56.75								2067	2304	2434	2607	2766	2915	3195	91
108	63.62								2314	2584	2734	2935	3101	3269	3578	96
114	70.88									2879	3045	3257	3455	3643	3991	101
120	78.54									3191	3374	3611	3821	4037	4420	107
132	95.03									3861	4082	4368	4631	4882	5350	117
144	113.10									4596	4859	5200	5515	5811	6367	128

SIZE OF CHIMNEYS FOR STEAM BOILERS

Assuming five pounds of coal is burned per horse power per hour

From Kent's "Mechanical Engineer's Pocket Book"

Dia. in Inches	Area "A" Sq. Ft.	Effec. Area $E = A - .6\sqrt{A}$ Sq. Ft.	Height of Chimney in Feet. Formula H.P. = 3.33 CA - .6√A / Assuming 5 lbs Coal Burned per Hour / Commercial H.P. of Boiler													Equiv. Sq. Chimney Sides $.65D + 4$
			50	60	70	80	90	100	110	125	150	175	200	225	250	300	
18	1.77	.97	23	25	27	29											16
21	2.41	1.47	35	38	41	44											19
24	3.14	2.08	49	54	58	62	66										22
27	3.98	2.78	65	72	78	83	88										24
30	4.91	3.58	84	92	100	107	113	119									27
33	5.94	4.48		115	125	133	141	149	156								30
36	7.07	5.47		141	152	163	173	182	191	204							32
39	8.30	6.57			183	196	208	219	224	245	268						35
42	9.62	7.76			216	231	245	258	271	289	316	342					38
48	12.57	10.44				311	330	348	365	389	426	460	492				43
54	15.90	13.51					427	449	472	503	551	595	636	675			48
60	19.64	16.98					536	565	593	632	692	748	800	848	894		54
66	23.76	20.83						694	728	776	849	918	981	1040	1097	1201	59
72	28.27	25.08						835	876	934	1023	1105	1181	1253	1320	1447	64
78	33.18	29.73							1038	1107	1212	1310	1400	1485	1565	1715	70
84	38.48	34.76							1214	1294	1418	1531	1637	1736	1830	2005	75
90	44.18	40.19								1496	1639	1770	1893	2008	2116	2318	80
96	50.27	46.01								1712	1876	2027	2167	2298	2423	2654	86
102	56.75	52.23								1944	2130	2300	2459	2609	2750	3012	91
108	63.62	58.83								2090	2289	2592	2771	2939	3098	3393	96
114	70.88	65.83									2685	2900	3100	3288	3466	3797	101
120	78.54	73.22									2986	3226	3448	3657	3855	4223	107
132	95.03	89.18									3637	3929	4200	4455	4696	5144	117
144	113.10	106.72									4352	4701	5026	5331	5618	6155	128

THE M W KELLOGG CO.

THE RAE-EN PRESS, NEW YORK


IMPROVED
PERFORATED
RADIAL
CHEVRON
BRICK
Patented

[BLANK PAGE]